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## RESEARCH ARTICLE

## OPEN ACCESS

# ANALYSIS OF THE RELATIONSHIP BETWEEN BLOOD DONOR KNOWLEDGE LEVEL AND BLOOD DONOR SERVICE MANAGEMENT TO THE LOW NUMBER OF BLOOD DONORS AT THE GUIDO VALADARES NATIONAL HOSPITAL BLOOD BANK IN 2019

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## ABSTRACT

Blood is the most essential part of human life because it is a means of transportation in the human body that can save someone from death. According to WHO Facts in 2019, blood collected globally per year only reached 117.4 million blood donors. As found in the serology and blood transfusion report from the RSNGV Blood Bank in 2017, explains that the blood that was successfully collected during the reporting period amounted to 3704 units of safe and ready-to-transfuse blood, of which only 21% was obtained from volunteer donors and 79% came from family donors. In the comparison between blood donors and blood transfusion needs, it was also found that the number of blood donors was less than the amount of blood transfused in 2017, the difference reaching 8-12%. The purpose of this study was to analyze the relationship between the level of knowledge and service management system to the lack of blood donors at the Guido Valadares National Hospital. The type of research is quantitative analytical with a Cross-Sectional survey approach, with a sample of 77 people. Data were obtained by interview and then analyzed univariately and bivariate using *Pearson product-moment correlation analysis*. The results of univariate data analysis showed that the level of knowledge of blood donors in the poor category was 49.4%, around 50.6% of respondents stated that the blood donor service management system was poor and 59.7% were in the family blood donor category. While the results of bivariate data analysis with *Pearson Product Moment correlation analysis* showed that the calculated  $r$  value for the level of knowledge  $r = 0.281$  was greater than the  $r$  table value of  $0.189$   $P = \text{value } 0.013 < 0.05$ , then the level of knowledge has a significant influence on the lack of donor numbers even though the level of relationship is very low, while the calculated  $r$  value for the management system shows a calculated  $r$ -value of  $-0.230$  greater than  $r$  table  $0.189$ ,  $p = \text{value } 0.044 < 0.05$ , then the donor service management system has a significant influence on the lack of voluntary blood donors even though the level of relationship is very low, namely  $-0.230$ . The conclusion of the statistical test data shows that the level of knowledge of blood donors and the blood donor service management system greatly affects the lack of blood donor numbers at the Guido Valadares National Hospital Blood Bank. So the advice that can be given is to increase public knowledge about the importance of blood donation activities and pay attention to the service system implemented, especially providing sufficient information to blood donors who will donate blood.

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## INTRODUCTION

Blood is the most important part of human life because it is a means of transportation in the human body that can save someone from death. Blood is also a vital healthcare resource used in various clinical services. Reduced blood from the body can be caused by various things such as accidents with severe bleeding while undergoing major surgery, and bleeding due to childbirth, these conditions require blood transfusion services as supportive care measures (WHO, 2016). The availability of blood in blood banks and blood transfusion services is very important for people who are sick, but not all patients will be

able to receive blood donations if the bloodstock supply is not comparable to demand. The balance of bloodstock with the need for blood transfusions is greatly influenced by the number of blood donors. A blood donor is an individual or someone who is willing to have their blood taken from their body to be transfused to another person or a specific individual who needs blood. In general, two blood donors are known, namely voluntary blood donors and replacement blood donors (WHO, 2016). Many people do not know about the importance of donating blood. This is what causes the unavailability of sufficient bloodstock for patients. Given that blood transfusion is already a common treatment method, namely supportive therapy that must go hand in hand with other treatments, sometimes even playing a decisive role in the treatment of a patient

because it is considered to be able to save the lives of patients who suffer from illness due to lack of blood. (Suminar, 2011). In developed countries, blood transfusion is most widely used for supportive care in cardiovascular surgery and transplantation, massive trauma, and hematological malignancies, in developing countries it is more often used for the treatment of complications related to pregnancy and severe anemia (WHO, 2016). In the 2016 WHO report, regionally the Southeast Asia Region (SEARO) with a population reaching 26% of the total global population only received 15% of blood donors and there are 6 countries (India, Nepal, North Korea, Bangladesh, Myanmar, and Timor-Leste) in this region whose blood donor rate is lower and less than to meet the basic needs of 10 per 1000 or 1% of the total population, each receiving 5-9 per 1000 population and the country with the lowest blood donor rate is Timor-Leste, which is less than 5 per 1000 population (WHO, 2016). This blood need has become a global problem because according to WHO Facts in 2019, blood collected globally per year only reached 117.4 million blood donors, 29% of which was obtained from the European region, 20% from the Americas/AMRO region, 22% from the Western Pacific, 15% from South East Asia/SEARO, 9% from the Eastern Mediterranean/EMRO and 5% from Africa/AFRO. The blood collection rate is lower than the level needed to meet basic needs (10 per 1,000 population) reported in 62 countries. (38 countries in the African Region, 8 countries in the Western Pacific Region; 6 countries in the Eastern Mediterranean Region; 6 countries in the Southeast Asia region, and 4 countries in the European Region, (WHO, 2019)

As a member state of SEARO which has a lower blood donor rate compared to other countries, namely the donor rate is less than 5 per 1000 population, this is a serious problem in the health care system in Timor-Leste, especially blood donor and blood transfusion services because blood is already a vital health care resource used in various clinical services that can restore health and save patients' lives. To overcome the problem of the lack of blood donor numbers, support is needed for a blood donor program management system that is supported by adequate policies, financial strength, infrastructure/facilities, and professional staff. To improve the availability and safety of blood to achieve the recommended targets, a blood program management system is needed which must be supported by several aspects, namely: Leadership and Governance, coordination and collaboration, provisions for safe blood and blood products, and clinical transfusions in patients. (WHO, 2007) From the management recommendations put forward by WHO above, the Timor-Leste Ministry of Health is authorized based on the constitutional law article 57 which guarantees the rights of its citizens to access adequate and free health services. In accordance with In this regard, the Timor-Leste government through the Ministry of Health has attempted to establish several blood banks, namely one blood bank at the Guido Valadares National Hospital and regional blood banks: Baucau, Maliana, Maubise, Suai, and Oecusse. The management of all Blood Banks is still based on hospitals that are led directly by hospital institutions, and structurally the blood bank is one of the units of the laboratory department whose management system still depends on the policy of the Guido Valadares National Hospital (RSNGV) whose competence of this unit is regulated in the hospital procedure regulations article 30:2.b. which is responsible for: mobilizing blood donors, collecting and conditioning blood, receiving blood requests, processing them according to what is specified, and ensuring timely service, controlling and guaranteeing blood quality in other Hospital blood banks.

Based on their competence, blood bank managers have made various efforts in accordance with existing provisions to ensure timely blood transfusion services, but the lack of blood donor interest in all blood banks has resulted in all blood banks often experiencing stockouts. In the serology and blood transfusion report from the RSNGV Blood Bank in 2017, it was explained that the blood collected during the reporting period amounted to 3704 units of blood that were safe and ready to be transfused. Of the amount is only 21% obtained from volunteer donors and 79% came from family donors. In the comparison between blood donors and blood transfusion needs, it was

also found that the number of blood donors was less than the amount of blood transfused in 2017, with the difference reaching 8-12% (MdS, 2017). From the study above, it is indicated that the problem of blood donors in Timor-Leste is the gap between the availability of blood and blood transfusion because voluntary blood donors are fewer than family blood donors and all blood banks in Timor-Leste do not yet have enough permanent blood donors or voluntary blood donors who can donate blood regularly. The availability of sufficient blood in the blood bank is very important because the need for blood transfusion can occur at any time such as for accident victims, major surgery patients such as heart, *cesarean section*, and people with blood diseases such as hemophilia and thalassemia. The problem of the lack of identified blood donors is quite complex and interrelated. Thus, to increase the number of blood donors at the Guido Valadares National Hospital Blood Bank, it is necessary to conduct a study related to the blood donor program. So that researchers are interested in conducting research related to the level of knowledge and management process of blood donor services regarding the lack of blood donors in Blood bank *Guido Valadares National Hospital 2019* In this study, the author limits the problem to the management activities of increasing the number of volunteer/regular blood donors, more specifically on the relationship between donor knowledge variables and health service management systems to the decreasing number of blood donors at the Guido Valadares National Hospital Blood Bank in Dili. This study will examine the contribution of donor knowledge variables and blood donor service management at the blood bank.

## LITERATURE REVIEW

**Knowledge:** Knowledge or cognition is the result of knowing and this occurs after people sense a certain object, knowledge about the positive and negative aspects of something that affects attitudes and behavior. The formation of new behavior, especially in adults, starts from the cognitive domain, in the sense that the subject knows in advance the stimulus or material about the object outside it so that it will give rise to new knowledge in the subject and then will give rise to an inner response in the form of the subject's attitude towards the object he knows (Notoatmodjo, 2003). According to Notoatmodjo (2012), a person's knowledge of an object has different intensities or levels. Broadly speaking, it is divided into 6 levels of knowledge: namely (1) knowing (*know*) is interpreted only as recalling (calling) previously existing memories after observing something. Therefore, knowing is the lowest level of knowledge. (2) Understanding (*Comprehension*) an object is not just knowing about the object, not just being able to mention it, but the person must be able to interpret correctly about the known object. (3) Application (*Application*) is interpreted when someone who has understood the object in question can use or apply the principles that have been known to other situations. (4) Analysis (*Analysis*) is a person's ability to describe separate and find relationships between components contained in a problem or known object. An indication that a person's knowledge has reached the level of analysis is when the person has been able to distinguish, or group, make diagrams (charts) of knowledge about the object. (5) Synthesis (*Synthesis*) refers to a person's ability to summarize or put into a logical relationship the components of knowledge that they have. In other words, synthesis is the ability to create a new formulation from existing formulations. (6) Evaluation (*Evaluation*) is related to a person's ability to justify or assess a particular object. This assessment is based on self-determined criteria, (Notoatmodjo, 2012)

Factors that influence a person's knowledge, namely: (a) Education is guidance given by someone to another person about something so that they can understand. It is undeniable that the higher a person's education, the easier it is for them to receive information, and in the end the more knowledge they have. Conversely, if a person's level of education is low, it will hinder the development of a person's attitude toward receiving information, and new values are introduced. (Notoatmodjo, 2007) (b) Work, where the work environment can make a person gain experience and knowledge both directly and

indirectly (Mubarak, 2007). (c) Age as a person's age increases, there will be changes in the psychic and psychological (mental) aspects (Mubarak, 2007). (d) Interest as a tendency or high desire for something. Interest makes someone try and pursue something and in the end gain deeper knowledge (Mubarak, 2007). (e) Experience is an event that someone has experienced in interacting with their environment (Mubarak, 2007). There is a tendency for a person to try to forget a good experience, but if the experience of the object is pleasant, psychologically there will be an impression that remains in the emotions so that it gives rise to a positive attitude. (f) Environment and Culture: If an area has a culture of keeping the environment clean, it is very likely that the surrounding community will have the attitude to always keep the environment clean, (Mubarak, 2007). In making categories of knowledge levels, it can also be grouped into two groups if the general public is being studied, namely as follows: a. The level of knowledge is in a good category if the value is  $> 61\%$ , b. The level of knowledge is in the poor category if the value is  $\leq 60\%$ . (Budiman, 2013)

**Management and its Functions:** According to George R Terry, management includes activities to achieve goals, carried out by individuals who contribute their best efforts through previously determined actions. (Smith, 2009) Management involves decision-making at various levels of the organization to get things done by others. The etymology of management comes from the old French language, namely "*ménagement*" which means the art of implementing and organizing. Management functions to organize and create a neat structured order. According to George R Terry, management is a science and art, has certain goals, and is intangible, its efforts are to achieve specific results, usually expressed in the form of targets, (Smith, 2009). According to George R Terry quoted by Achmad Farich in 2012, he stated that: There are four basic functions of management, namely planning, organizing, motivating, and controlling. The definition of management functions according to several experts (a) George Terry management functions, namely *Planning, Organizing, Actuating, and Controlling*. (b) L, M Gullick management functions *Planning, Organizing, Staffing, Directing, Coordinating, Reporting, and Budgeting*. (c) H. Fayol's management functions, namely *Planning, Organizing, Commanding/coordinating, and Controlling*. (d) Koontz O'Donnell's management functions, namely *Planning, Organizing, Staffing, Directing and Controlling*, (Farich, 2012). But the most widely accepted are the management functions given by Koontz and O'Donnell, namely (a) Planning as a management function to systematically make decisions about the goals to be achieved and the activities or actions needed to achieve things to be achieved by individuals, groups, work units, or the organization as a whole in the future. (b) Organizing as a management function to collect and coordinate human, financial, physical, information, and other resources needed to achieve organizational goals. (c) Staffing is a position provided by the organizational structure that must be staffed with personnel who are able and willing to carry out the assigned functions according to the quality of management personnel. (d) Directing is a management function that involves the manager's efforts to stimulate high performance by employees and includes directing, motivating, and communicating with employees, both individually and in groups. (e) Controlling as a management function to monitor progress and make changes as needed to ensure that organizational goals are achieved.

**Health services:** According to Levey and Lomba (1973), health services are every effort carried out individually or together in an organization to maintain and improve health, prevent and cure diseases, and restore the health of individuals, families, groups, and or communities (Azwar, 1994). In accordance with these limitations, it is immediately easy to understand that the forms and types of health services that can be found are many. All of this is very much determined by the organization of services, scope of activities, and targets of health services (Azwar, 1994). Although there are many forms and types of health services, if simplified in general they can be divided into two. The forms and types of health services, if explained from Hodgetts' opinion and Cascio's (1983) namely. (a). Medical services *are* characterized by a way of organizing which can be solo

*practice* or jointly in one organization ( *institution* ), the main goal is to cure diseases and restore health, and the targets are mainly individuals and families. (b) Public health services *are* characterized by a way of organizing which is generally jointly in one organization, the main goal is to maintain and improve health and prevent disease, and the targets are mainly for groups and communities (Azwar, 1994).

Although medical services are different from public health services, in order to be called good health services, both must have various basic requirements. The basic requirements referred to according to Azrul Azwar (1994) are: (a) Available and continuous where good health services are health services that must be available in the community (*available*) and are continuous. This means that all types of health services needed by the community are not difficult to find, and they existence in the community is at any time needed. (b) Acceptable and reasonable where good health services are those that are acceptable *to* the community and are appropriate. This means that health services do not conflict with the beliefs and beliefs of the community. (c) Easily accessible where good health services are those that are easily accessible *to* the community. The definition of accessibility here is mainly from the location perspective. Health services that are too concentrated in urban areas only, and meanwhile are not found in rural areas, are not good health services. (d) Easily accessible where good health services are those that are easily accessible (*affordable*) to the community. The definition of affordability here is mainly from a cost perspective. Health services that are expensive and therefore can only be enjoyed by a small portion of the community are not good health services. (e) Quality where good health services are those that are of quality (*quality*). The definition of quality here refers to the level of perfection of the health services provided, in accordance with the code of ethics and standards that have been set (Azwar, 1994). Health workers or personnel are any person who devotes themselves to the health sector and has knowledge and/or skills through education in the health sector which for certain types requires authority to carry out health efforts (Law of the Republic of Indonesia No. 23 of 1992) concerning health. As professional personnel, health workers have the following characteristics: (a) Developing unique services to the community, carrying out their professional duties in accordance with the applicable code of ethics, being free to make decisions in carrying out their profession, receiving fair compensation, having a professional organization, good quality of service, based on the calling and firm commitment, oriented towards service and objective needs and autonomy in carrying out actions in accordance with the licensed profession (RI, 1992).

**Blood donors:** Animal-to-human blood transfusions originated in France and England. On June 15, 1667, French physician Jean-Baptist Denis, during the reign of Louis XIV, performed the first human blood transfusion using the blood of a sheep and a calf. In the same period, on November 23, 1667, in England, physician Edmund King offered 20 shillings to a poor man named Arthur Coga for a sheep's blood transfusion. In 1922, Percy Lane Oliver started a donation service in his London home. He recruited donors who agreed to remain available for twenty-four hours to, if necessary, go to a hospital to donate blood. These donors were first tested to verify their blood type and the choice of each donor depended on the blood type required by the recipient (Nunes, 2010). Blood is a liquid tissue consisting of two parts. The intercellular material is a fluid called plasma and in it are solid elements, namely blood cells. The total volume of blood is approximately one-twelfth of body weight or approximately 5 liters. Approximately 55 percent is fluid, while the remaining 45 percent consists of blood cells (Evelyn C. Pearce, 2012). Blood is made up of red blood cells, white blood cells, platelets, and plasma. Red blood cells carry oxygen from the lungs to the tissues and carbon dioxide from the tissues back to the lungs. White blood cells fight infection and other foreign substances that may enter the body. Platelets play an important role in coagulation. Plasma, the fluid component of blood, is rich in proteins that help keep the body healthy and functioning properly, carrying nutrients to the tissues and transporting substances that must be eliminated from

the body through excretion, (Evelyn C. Pearce, 2012). Humans have different chemical markers inherited in their red blood cell membranes. The major markers are called A and B and determine the major blood groups. Individuals may have one, two, or none of these markers in all their red blood cells and are therefore called A, B, AB, and O blood types respectively. People with group A red blood cells have anti-B antibodies in their plasma. People with group B red blood cells have anti-A antibodies in their plasma. People with group AB blood have neither anti-A nor anti-B antibodies. People without red blood cell markers have both anti-A and anti-B antibodies in their plasma. The presence of red blood cell markers and plasma antibodies determines the primary compatibility of blood for transfusion, as plasma antibodies bind to foreign red blood cells causing damage (Evelyn C. Pearce, 2012).

Blood donation is an obligation for every community as a form of concern for others. Many people do not know about the benefits of blood donation for health. There are even people who are reluctant to donate blood because they are worried about the side effects it causes. In fact, by donating blood, the blood cells in the body are replaced more quickly with new ones. If you donate blood once every three months, your health will be maintained. In addition to being useful for helping others, donating blood also makes our bodies healthier (RI, 2009). The Indonesian Red Cross defines blood donors as people who donate blood for the purpose of blood transfusion (PMI 2008). Blood donors are people who donate blood or its components to patients for the healing of diseases and health recovery. Blood donation is done voluntarily and must provide correct information about their health and lifestyle, (RI, 2011) The National Aids Control Organization of India (NACO 2007) explains that there are two categories of blood donors, namely voluntary blood donors and replacement blood donors or other blood donors. Voluntary blood donors are blood donors who donate their blood for free according to the specified time period, namely new voluntary donors, past voluntary donors, regular voluntary donors, and no regular non-remunerated voluntary blood donors. Replacement blood donors are donors who donate their blood to replace the blood that has been transfused such as family donors, professional blood donors, forced blood donors, and autologous blood donors (NACO, 2007).

The World Health Organization (WHO) document on *the Management of National Blood Programmes; Proceedings of three WHO workshops (2007–2009)* explains that Every government has a responsibility to ensure the availability, accessibility, adequacy, and safety of blood supplies for its people. However, maintaining a safe and adequate blood supply remains a major challenge in many developing countries. Two major problems are the gap between the supply and demand for safe blood supplies and serious safety issues related to inadequate blood screening. A major obstacle to resolving these problems is the lack of robust infrastructure and systems to support the management of blood programs (WHO, 2007). To address this issue, the World Health Organization (WHO), in its Aide-Memoire, recommends that in order to achieve safe blood transfusion: Ministries of Health are responsible for establishing National Blood Programmes with a nationally coordinated system of blood donor and transfusion services that ensures: (a) Effective leadership and governance for the sustainable development of the national blood system. (b) Leadership and Governance. (c) Coordination and collaboration. (d) Provision of safe blood and blood products. (e) Clinical transfusion in patients. Some of the requirements that aim to ensure the safety of blood donors and recipients according to the Indonesian Minister of Health Regulation (2015) are as follows: Age 17-60 years, Minimum body weight of 45 kg, Body temperature ranging from 36.6-37°C, Good blood pressure indicated by systolic 110-160 mmHg and diastolic mmHg, Regular pulse rate of around 50-100 times/minute, Hemoglobin for both men and women at least 12.5 grams, For female blood donors are not menstruating, pregnant or breastfeeding, Do not suffer from heart disease, liver, kidney, lung, diabetes, bleeding, seizures or chronic skin diseases, Never suffered from hepatitis B, syphilis-epilepsy, Never experienced drug dependence, acute and chronic alcoholism, Never suffered from skin diseases in the veins (blood vessels) that will be punctured. Do not suffer from HIV/AIDS, (RI, 2015). Donating blood will help reduce the risk of heart attacks and other heart problems, studies show that donating blood will reduce excess iron in the body. Although more research is needed to confirm it, excess iron is thought to play a role in heart disorders. In addition, the health of donors will always be monitored because every time a health check and blood screening test are carried out for infections that can be transmitted through blood.

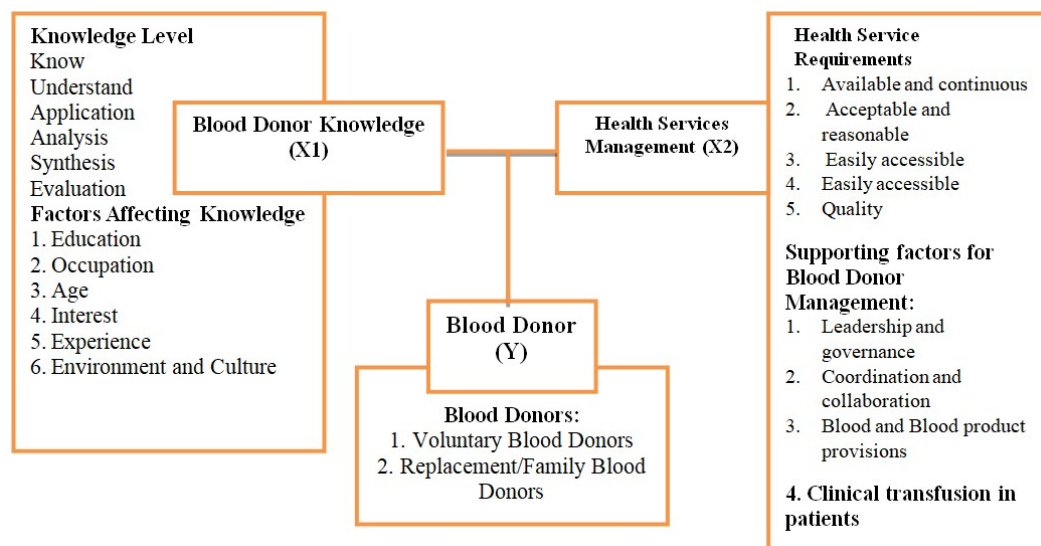


Chart 1. Theoretical framework and concepts and research hypotheses

Blood transfusion is a therapeutic procedure “transferring blood or blood components from one individual (autologous donor or heterologous donor) to another (recipient)”. It is considered an important modern treatment technology that can be used to save lives or improve the health of patients. Although the therapy is effective, acute or late complications can occur during or after administration, (Nunes 2010). Blood transfusion is a medical activity of giving blood to a patient whose blood has been provided in a plastic bag and is also an important part of patient care and sometimes the only option for survival. (WHO 2019).

Another benefit of donating blood is getting psychological health because donating something invaluable to those in need will make us feel psychological satisfaction. A study found that elderly people who regularly donate blood will feel energetic and fit. The benefits of donating are helping to reduce the risk of having another heart attack and if blood donation is done routinely every three months, it will produce new blood cells, (Arini, 2018). The conceptual framework of research is a description and visualization of the relationship or connection between concepts, a description, and visualization of the relationship or connection between one concept and another concept,

or between one variable and another variable of the problem to be researched (Notoatmodjo, 2010).

## METODE RESEARCH

**Cross-sectional** survey approach on respondents to collect primary data using research instruments, (Notoatmodjo, 2010). This study will be conducted at the blood bank of the Guido Valadares National Hospital, in Bidau Toko Baru, Dili, Timor-Leste starting from early February 14 to March 31, 2020. The variables in this study are the independent variables of the level of knowledge of blood donors and health service management and the dependent variable is the lack of blood donors. Population is a generalization area consisting of; objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn, (Sugiono, 2012). The population is all blood donors who come to donate blood at the blood bank of the Guido Valadares *National Hospital*. The determination of the size of the author's sample uses the formula from Taro Yamane and Slovin (Ridwan, 2012), so the number of samples in this study is 77 respondents. The sampling technique is systematic random sampling, with two criteria, namely inclusion and exclusion. Data were obtained in several ways, namely interviews, questionnaires, and documentation. Data analysis techniques were univariate and bivariate. The bivariate analysis used in this study was the *Pearson product-moment correlation analysis* (Arikunto, 2010). This analysis will be used in testing the magnitude of the influence and contribution of variables,  $X_1$  and  $X_2$  to  $Y$ . This analysis aims to determine the contribution of the level of knowledge of blood donors ( $X_1$ ), health service management ( $X_2$ ) together contributing to the lack of blood donors at the Guido Valadares *National Hospital Blood Bank*. The *Pearson product-moment (PPM)* correlation analysis used the assistance of the SPSS program Version 21.00 for Windows. PPM correlation is symbolized ( $r$ ) with the provision that the  $r$  value is not more than the price ( $-1 \leq r \leq +1$ ). If the  $r$  value =  $-1$  means the correlation is perfectly negative;  $r = 0$  means there is no correlation; and  $r = 1$  means the correlation is very strong. The meaning of the  $r$  value will be consulted with the  $r$  value interpretation table as follows:

**Table 1. Interpretation of Correlation Coefficient  $r$  Value**

| Coefficient interval | Level of influence |
|----------------------|--------------------|
| 0.80 - 1.000         | Very high          |
| 0.60 - 0.799         | Tall               |
| 0.40 - 0.599         | Enough             |
| 0.20 - 0.399         | Low                |
| 0.00 - 0.199         | Very Low           |

Source: Arikunto 2010

From the results of the existing data analysis, the following hypothesis will be formulated:

- **Ho:** There is no relationship between the level of knowledge of blood donors and the lack of blood donors at the *Guido Valadares National Hospital Blood Bank*.
- **Ha:** There is a relationship between the level of knowledge of blood donors and the minimum number of blood donors at the *Guido Valadares National Hospital Blood Bank*.
- **Ho:** There is no relationship between Health Service Management and the lack of donors at the *Guido Valadares National Hospital Blood Bank*.
- **Ha:** There is a relationship between Health Service Management and the lack of donors at the *Guido Valadares National Hospital Blood Bank*.

## RESEARCH RESULTS

**Blood Donor Data at RSNGV Blood Bank:** In 2019, HRSNGV Blood Bank collected 4052 blood bags, of which blood type A was 26.97%, blood type B was 23.89%, blood type AB was 5.92%, and

blood type O was 43.21%. The blood bags were distributed to obstetrics rooms as much as 22.98%, surgical rooms 12.66%, internal medicine rooms as much as 25.19%, children's rooms 14.34%, blood bags distributed to Regional Hospitals were 2.37% and Private Clinics as much as 2.46% (HNGV, 2019)

**Respondent Characteristics:** Respondents who participated in the study were 77 respondents with the characteristics of respondents based on gender showing that 80.5% were male and 19.5% were female. The average age of respondents was 21-30 years old as many as 66.2%, 31-40 years old 20.8% and less, namely 51-60 years old and 18-20 years old each as many as 3.9%. The level of education of respondents from college as many as 27.3%, high school as many as 20.8%, junior high school 28.6%, and elementary school as many as 23.4%. Characteristics of respondents based on the type of work or profession that donated blood were those who did not have a permanent job or others as many as 20.6%, Students as many as 18.2%, Farmers 11.7%, Civil Servants 14.3% and Private 35.1%. And the weight of respondents who can donate blood is 46-50 kg as many as 16.9%, BB 51-60 kg there are 40.3%, BB 61-70 kg there are 27.3%, and above 71 kg there is 15%. While the height of respondents when donating blood is mostly 161-170 cm as many as 44.2%, TB 152-160 cm there are 41.6%, and TB more than 171 cm there are 14.3%. Of the 77 respondents who donated blood, 36.4% had blood type A, 16.9% had blood type B, and 2.6% had blood type AB. and blood type O is 44.2%.

### Analysis is Univariate

**Univariate analysis of the Knowledge variable ( $X_1$ ):** Table 2 above explains that of the 77 respondents who participated in the study, they chose alternative answers for the 10 statements and questions asked to measure the level of knowledge ( $X_1$ ) about knowing and understanding blood donation activities. Statement items 1-5 about respondents' knowledge about donating blood because there are other people who need it, with 18 people (23.4%) answering Yes and 59 people (76.6%) answering No. Respondents who obtained sufficient information before donating blood, where the respondents' answers stating Yes were 28 people (36.4%) and 49 people (63.6%) answered No. Respondents who knew about the benefits of donating blood could make the body healthier, with 37 people (25.1%) answering Yes and 50 people (64.9%) answering No. Respondents who knew that blood donation was a charity or social activity with 21 people (27.3%) answering Yes and 56 people (72.7%) answering No. Respondents knew that donating blood could save someone's life, with 27 people (35.1%) answering Yes and 50 people (64.9%) answering No. Statement of items 6-10 about respondents' knowledge understanding that donating blood does not require a reward which stated yes answer as many as 40 people (51.9%) and no answer as many as 37 people (48.1%). Respondents who stated it is important to donate blood regularly every 3 or 4 months yes answered as many as 13 people (16.9%) and no answered as many as 64 people (83.1%). Respondents who stated that donating blood is from their own intention and conscience who stated yes answer as many as 34 people (44.1%) and no answer as many as 43 people (55.8%). Respondents who stated that donating blood does not require praise from others with yes answer as many as 37 people (48.1%) and no answer as many as 40 people (51.9%). Respondents who stated it is important to know the requirements for donating blood with yes answers as many as 37 people (48.1%) and no answers as many as 40 people (51.9%).

**Univariate Analysis of Service Management Variables ( $X_2$ ):** Table 3 above explains that of the 77 respondents who participated in this study, they chose alternative answers for the 10 statements submitted to measure the service management system ( $X_2$ ) in blood donation activities. Statement of points 1-5 on variable ( $X_2$ ) about service management in blood donor activities, respondents who stated management of coordination of blood donor activities between employees and blood donors stated Good as many as 41 people (53.5%) and Not Good 36 people (46.8%). Respondents who stated the readiness and professionalism of employees in serving blood donors with good answers were 35 people (45.5%) and not good



**Table 2. Results of interviews with 77 respondents regarding the level of knowledge regarding blood donation at the RSNGV Blood Bank (n=77)**

| No | Interview                                                            | Number of Answer Categories |             | Total (n = % ) |
|----|----------------------------------------------------------------------|-----------------------------|-------------|----------------|
|    |                                                                      | Yes (n = % )                | No (n = % ) |                |
| 1  | You come to donate blood because there are other people who need it. | 18 (23.4)                   | 59 (76.6)   | 77 (100)       |
| 2  | You have obtained sufficient information before donating blood.      | 28 (36.4)                   | 49 (63.6)   | 77 (100)       |
| 3  | The benefits of donating blood can make the body healthier           | 27 (35.1)                   | 50 (64.9)   | 77 (100)       |
| 4  | Blood donation is a charity/social activity                          | 21 (27.3)                   | 56 (72.7)   | 77 (100)       |
| 5  | Donating blood can save someone's life                               | 27 (35.1)                   | 50 (64.9)   | 77 (100)       |
| 6  | Donating blood does not require any reward                           | 40 (51.9)                   | 37 (48.1)   | 77 (100)       |
| 7  | Is it important for you to donate blood regularly every 3/4 months?  | 13 (16.9)                   | 64 (83.1)   | 77 (100)       |
| 8  | Donating blood comes from one's own intentions and conscience        | 34 (44.2)                   | 43 (55.8)   | 77 (100)       |
| 9  | Donating blood does not require praise from others                   | 37 (48.1)                   | 40 (51.9)   | 77 (100)       |
| 10 | It is very important to know the requirements for donating blood.    | 37 (48.1)                   | 40 (51.9)   | 77 (100)       |

Source: 2020 Research Data

**Table 3. Results of interviews with respondents regarding the service management system at the Blood Bank (n=77)**

| No | Interview Questions                                                                | Number of Answer Categories |                   | Total (n = % ) |
|----|------------------------------------------------------------------------------------|-----------------------------|-------------------|----------------|
|    |                                                                                    | Good (n = % )               | Not Good (n = % ) |                |
| 1  | Coordination of blood donation activities between employees and brothers/sisters   | 41 (53.2)                   | 36 (46.8)         | 77 (100)       |
| 2  | Readiness and professionalism of employees in serving you as blood donors          | 35 (45.5)                   | 42 (54.5)         | 77 (100)       |
| 3  | Supervision from superiors over the team serving you when you donate blood         | 36 (46.8)                   | 41 (53.2)         | 77 (100)       |
| 4  | The quality of equipment used in blood donation activities                         | 39 (50.6)                   | 38 (49.4)         | 77 (100)       |
| 5  | Employee readiness to serve blood donors                                           | 43 (55.8)                   | 34 (44.2)         | 77 (100)       |
| 6  | Ease of access to blood donor facilities                                           | 44 (57.1)                   | 33 (42.9)         | 77 (100)       |
| 7  | Information and counseling from health workers regarding blood donation procedures | 39 (50.6)                   | 38 (49.4)         | 77 (100)       |
| 8  | Supplemental food received after donating blood                                    | 47 (61)                     | 30 (39)           | 77 (100)       |
| 9  | Dissemination of information before and after donating blood                       | 44 (57.1)                   | 33 (42.9)         | 77 (100)       |
| 10 | Quality of service to you while you donate blood                                   | 43 (55.8)                   | 34 (44.2)         | 77 (100)       |

Source: Primary data 2020

**Table 3. Results of respondents' answers regarding blood donation activities at the Blood Bank (n=77)**

| No | Interview Questions                                                                                   | Number of Answer Categories |            | Total (n=%) |
|----|-------------------------------------------------------------------------------------------------------|-----------------------------|------------|-------------|
|    |                                                                                                       | Yes (n=%)                   | No (n=%)   |             |
| 1  | You come to donate blood at the RSNGV blood bank of your own free will.                               | 34 (44.2)                   | 43 (55.8)  | 77 (100)    |
| 2  | You came to donate blood because your boss or a family friend asked you to.                           | 10 (13)                     | 67 (87)    | 77 (100)    |
| 3  | You come to donate blood because there is a family member or friend who needs it.                     | 62 (80.5)                   | 15 (19.5)  | 77 (100)    |
| 4  | You come to donate blood because it is a routine activity.                                            | 12 (15.6)                   | 65 (83.1)  | 77 (100)    |
| 5  | You came to donate blood because you got information from a blood bank employee.                      | 13 (18.9)                   | 64 (83.1)  | 77 (100)    |
| 6  | You donate blood because there are adequate and safe facilities.                                      | 66 (85.7%)                  | 11 (14.3%) | 77 (100)    |
| 7  | Donating blood because of getting adequate and appropriate service                                    | 62 (80.5%)                  | 15 (19.5%) | 77 (100)    |
| 8  | Came to donate blood because they got information from the media (TV, radio, posters, and newspapers) | 7 (9.1)                     | 70 (90.9)  | 77 (100)    |
| 9  | Datan donates blood because blood banks are very easy to access                                       | 58 (75.3)                   | 19 (24.7)  | 77 (100)    |
| 10 | Donating blood can make the body fresher and healthier                                                | 14 (18.2)                   | 63 (81.8)  | 77 (100)    |

Source: Primary data from 2020 research results

(54.5). Respondents stated that there was supervision from superiors towards the team serving blood donors, with good answers from as many as 36 people (46.8) and not good 41 people (53.2%). Respondents who stated that the quality of equipment used in blood donor activities, stated good as many as 39 people (50.6%) and not good 38 people (49.4%). Respondents who stated the readiness of employees to serve blood donors well were 43 people (55.8%) and not good as many as 34 people (44.2%).

Statement of items 6-10 respondents who stated the ease of accessing blood donor facilities with good answers were 44 people (57.1%) and not 33 people (42.9%). Respondents who stated information and counseling from health workers regarding blood donor procedures with good answers were 39 people (50.6%) and not good 38 people (49.4%). Respondents who stated management in providing supplementary food received after donating blood were 47 people (61%) and not good 30 people (39%). Respondents who stated information socialization before and after donating blood and who stated good were 44 people (57.1%) and not good 33 people (42.9%). And respondents who stated the quality of service to donors was good were 43 people (55.8%) and not 34 people (44.2%). Table 3 above explains that of the 77 respondents who participated in this study, they chose alternative answers for the 10 statements submitted to measure and analyze blood donors (Y) in blood donation activities at

the RSNGV blood bank. Questions 1-5, show that the blood donors who stated that they came to donate blood at the RSNGV blood bank of their own will were 34 people (44.2%) and not 43 people (55.8%). Respondents who stated that they donated blood because they were asked by their superiors or friends were 10 people (13%) and not 67 people (87%). Respondents who stated that they donated blood because there was a family or friend in need were 62 people (80.5%) and not 15 people (19.5%). Respondents who donated blood because it was a routine activity were 12 people (15.6%) and not 65 people (83.1%). Respondents who came to donate blood because they received information from blood bank employees were 13 people (18.9%) and not 64 people (83.1%). Questions 6-10 respondents who said that donating blood because there are sufficient and safe facilities are 66 people and those who stated no are 11 people (14.3%).

Respondents who donated blood because they received sufficient and appropriate services were 62 people (80.5%) and none were 15 people (19.5%). Respondents who donated blood, because they got information from the media (TV, radio, posters, and newspapers), were 7 people and none were 70 people (90.9%). Respondents who came to donate blood because blood banks are easy to access are 58 people (75.3%) and none are 19 people (24.7%). And respondents who donated blood for the reason that it can make you fresher and healthier are 14 people (18.2%) and 63 (81.8%).

## Recapitulation of Univariate Analysis Results on Knowledge and Management Variables

**Table 4. Recapitulation of the results of the Univariate Analysis of knowledge, management, and categories of blood donors from 77 respondents who participated in this study**

| No | Variables                        | Indicator       | Amount | %     |
|----|----------------------------------|-----------------|--------|-------|
| 1  | Knowledge Variable (X1)          | Good            | 39     | 50.6  |
|    |                                  | Not good        | 38     | 49.4  |
|    |                                  | Total           | 77     | 100.0 |
| 2  | Service Management Variable (X2) | Good            | 32     | 41.6  |
|    |                                  | Not good        | 45     | 58.4  |
|    |                                  | Total           | 77     | 100.0 |
| 3  | Blood Donor Category (Y)         | Family Donor    | 46     | 59.7  |
|    |                                  | Voluntary Donor | 31     | 40.3  |
|    |                                  | Total           | 77     | 100.0 |

Source: Primary Data 2020

Table 4 above according to the recapitulation data of univariate analysis shows that around 51% of respondents have good knowledge about blood donor activities, no around 49% of respondents have poor knowledge, while respondents who stated the service management system in blood donor activities in the good category were 42%, and 58% of respondents stated management in services for blood donor activities, in the poor category. Thus, the results of the recapitulation of univariate data analysis show that the category of family donors is 60% and voluntary donors are only 40%, then there is a significant relationship between the level of knowledge of blood donors and the service management system of the donor bank greatly affects the increase in blood donors in the voluntary donor category.

**Bivariate Data Analysis:** The testing of the research variables, namely blood donor knowledge and the service management system for blood donors in this study, can be seen in the following table:

**Table 5. Bivariate Analysis, namely Product Moment Correlation**

| No | Variables              | Calculated r value | Table r value | P-value (< 0.05) |
|----|------------------------|--------------------|---------------|------------------|
| 1  | Knowledge (X1)         | 0.281              | 0.189         | 0.013            |
| 2  | Management System (X2) | -0.230             | 0.189         | 0.044            |

Source: Primary Data Results of Primary Data Analysis using SPSS Version 21

Table 5 above explains the results of the SPSS Version 21.00 output analysis showing that the Pearson Correlation Value or r value is 0.281 (coefficient interval value 0.200-0.399), this result shows that the level of influence of knowledge is still very low on the lack of blood donors. From the output results, it can be concluded whether there is a relationship between respondent knowledge and the lack of blood donors. If the Significance value  $>0.05$  then  $H_0$  is accepted, if the significance value  $<0.05$  then  $H_0$  is rejected. Because the significance value of the SPSS Version 21.00 output results shows 0.013, meaning less or  $<0.05$ . This means that the  $H_0$  hypothesis is rejected and the  $H_a$  hypothesis is accepted. This means that there is a relationship between the level of knowledge and the lack of blood donors. So the correlation coefficient or r value of respondent knowledge with the lack of blood donors is 0.281. Table 10 above explains the output results of SPSS Version 21.00 showing that the Pearson Correlation Value or r value is -0.230 (coefficient interval value 0.200-0.399), this means that the level of management influence is still very low on the lack of blood donors. From the output results, it can be concluded that there is a relationship between the management system and the lack of blood donors. If the Significance value  $>0.05$  then  $H_0$  is accepted, if the significance value  $<0.05$  then  $H_0$  is rejected. Because the significance value of the SPSS Version 21.00 output results shows 0.044 meaning less or  $<0.05$ . This means that the hypothesis is  $H_0$  is rejected and the hypothesis  $H_a$  is accepted. This means that there is a relationship between the management system and the lack of blood donors. So the correlation coefficient or r value of management with the lack of

blood donor numbers of -0.230 means that the level of influence is in the low category. Because the value shows negative results, it means that if the management system is good, it will increase the number of blood donors.

## DISCUSSION

**Level of knowledge:** In his book, Notoadmodjo (2012) states that a person's knowledge of an object has an intensity or level which is divided into 6 levels of knowledge such as: knowing, understanding, application, analysis, synthesis, and *evaluation*. Budiman and Riyanto (2013) grouped the level of knowledge into two groups if the respondents were the general public, namely: The level of knowledge in the good category had a value of  $> 61\%$  and the level of knowledge in the poor category had a value of  $\leq 60\%$ . Mubarak (2007) stated that a person's level of knowledge is influenced by several internal and external factors such as education, age, work, interests, experience, and the surrounding environment. The results of this study are consistent with the literature, the level of knowledge of the results of this study showed 49.4% lacking and 50.6% good in the process of participating in donating blood at the RSNGV Blood Bank. The results of the study conducted by Hasmedin Askari (2018) showed that 35.3% of respondents had low awareness of blood donation (Majdabadi, 2018). The results of another study conducted by Melku (2018) showed that of respondents who had adequate knowledge 48.2% and 51.6% had inadequate knowledge about blood donation (Melku M, 2018). So the results of the study when compared to the research that has been conducted by the study showed that around 49.4% of respondents' knowledge level was not good about blood donation activities due to low levels of education where 52% of respondents had elementary and junior high school education. According to Mubarak (2007), one of the factors that influence a person's knowledge is their level of education, where the higher a person's education, the easier it is for them to receive information and ultimately the more knowledge they have. However, this study shows that around 52% of respondents are categorized as having a low level of education. There is also a person's knowledge that can be influenced by the type of work where the work environment can make someone gain good experience and knowledge. In this study, the majority of respondents worked in private sector (31.2%) and did not have permanent or other jobs (20.6%). Thus, the environment greatly influences a person's knowledge because of the lack of information and the environment has an important role in increasing a person's knowledge.

The results of this study can explain that the level of knowledge of respondents who are categorized as less good is caused by interest factors, where blood donors who come to donate blood at the RSNGV Blood Bank because there are family members who need it, Interest is interpreted as a high desire for something, interest makes someone try and pursue something and ultimately gain deeper knowledge. The reasons for respondents who do not know about the importance of donor activities are when giving blood or donating blood must require compensation, have no intention at all but because there are family members who need blood then they only come to donate blood without having to know the requirements for donating blood. From the several statements mentioned above, it can be stated that the lack of respondent knowledge about blood donation activities is due to the lack of information about blood donation or blood donation activities. So it is necessary to conduct socialization and advocacy about blood donation activities in the general public to explain the benefits of donating blood for others and for yourself. The lack of blood donor numbers at the Blood Bank is due to the lack of public knowledge about blood donation activities. Blood donors who come to donate blood at the Blood Bank are family donors as much as 59.7% and voluntary donors as much as 40.3%.

**Service Management System:** Management is a process that organizes and manages an object systematically and plans to achieve certain goals, According to George R. Terry in his book explains that "management is the achievement of predetermined goals by using

other people". According to Stoner "Management is a process of planning, organizing, directing and supervising, the efforts of members of the organization and the use of other organizational resources in order to achieve predetermined organizational goals", based on this understanding, in the blood donor management system, management is needed that can increase the interest of others by using available resources with systematic procedures and maximum supervision in order to achieve an increase in the number of blood donors who can increase the amount of blood supply at the blood bank of the Guido Valadares National Hospital. In the results of the study of 77 respondents to analyze the management system implemented in the Blood Bank to carry out blood donation activities, it showed that 58.4% stated that the management system was not good, and 42.6% stated that the management system was good. Several indicators used to measure the management system implemented are coordination, professional readiness, supervision from superiors, quality of equipment used, employee readiness, ease of access, information and counseling, provision of supplementary food, information socialization, and quality of service. From the research data found, it shows that the coordination system between, the quality of the tools used, the readiness of employees in serving blood donors, and easy access to blood donor facilities are categorized in a fairly good management system. While the category of a good service system is the quality of service, food supplements are given information socialization and employee professionalism in providing services. Management is a different process that is applied to achieve a goal. In a study of 77 respondents who stated that management was not good as much as 58%. Where 48% of respondents in the education level category were already high so they had the insight and knowledge to provide an evaluation of an activity application when respondents donated blood at the Guido Valadares National Hospital Blood Bank.

**Blood Donor:** Blood donors are people who donate blood or its components to patients for the healing of diseases and health recovery (RI, 2011). According to NACO (2007), there are two types of blood donors, namely voluntary donors, namely blood donors who donate blood for free according to the time period, and replacement donors, namely donating their blood to replace the blood that has been transfused such as family donors, professional blood donors and forced blood donors (NACO, 2007). The results of the study of 77 respondents who participated in this study showed that 62 respondents (80.5%) donated blood because there was a family member in need, 66 people (65.7%) stated that the blood donation facilities were quite appropriate and 58 respondents (75.3%) stated that it was easy to access a blood bank to donate blood. From the results of the study, it can be explained that one of the factors that determines someone to donate blood is because there is a family member in need so they are forced to donate blood. The results of the study when compared with the results of Majdabadi's study (2018) showed that 49.2% and 35.2% had low awareness and while to donate blood, (Majdabadi, 2018). While in this study showed that only 44.2% of their own will to donate blood at the blood bank. Where 83.1% stated that they did not routinely donate blood, and 81.8% did not understand and did not understand that blood donation can increase body freshness. Thus it can be concluded that the respondents' awareness decreased in donating blood due to a lack of information about blood donation activities, where this study showed that only 9.1% listened to information through television, radio, newspapers, and other media while 90.9% did not listen to good information from officers or the media.

**The Relationship Between Level of Knowledge and Low Blood Donor Rates:** Knowledge is the result of knowing and this occurs after someone senses a certain object (Notoadmodjo, 2003). Knowledge about the positive and negative aspects of something that affects attitudes and behavior. The results of this study indicate that 49.4% of the category of knowledge is not good about blood donation. According to PMI (2008), blood donors are people who donate blood for the purpose of blood transfusion. From the results of statistical tests with *Pearson Correlation values* or *r* values showing a coefficient value of 0.281 (coefficient interval value 0.200-0.399),

this means that the influence of the level of knowledge is still very low on the lack of blood donor numbers. However, it has a significant value because the *Ho* hypothesis test is rejected because the significance value of the SPSS output results shows 0.013; meaning less than or  $<0.05$ , the alternative hypothesis is accepted and it is stated that there is a relationship between the level of knowledge and the lack of blood donor numbers. The relationship between the level of knowledge and the lack of blood donors has a correlation of 0.281 and has a very low level of relationship and is one-way because the value is positive and the coefficient interval between 0.200-0.399 is at a sufficient level if one value decreases or increases then the other variable will also increase. This shows that one variable is sufficient and one-way because the value is positive, thus knowledge of knowing, understanding, and applying is one of the essential levels of knowledge for everyone about blood donation activities so that they can donate blood voluntarily and routinely to help others who need a drop of blood.

The results of another study conducted by Gebrsilase (2017) showed that 79.4% of health science students' knowledge level about blood donation activities was good when compared to students from non-health sciences showed that 23.9% of their knowledge level was not good about blood donation activities (Gebrsilase, 2017). The results of the study by Balkes (2014) showed that 28.6% had inadequate knowledge about blood donation, and only 9.2% had adequate knowledge (Abderrahmana, 2014). Meanwhile, the level of knowledge of respondents who participated in this study can be influenced by several factors, namely experience and interest factors. From the results of the study of 77 respondents, 66.2% stated that they had no intention at all to donate blood, and 80.5% of respondents stated that they were forced to have family members who needed blood so that respondents came to donate blood and only 7.1% of respondents heard information about blood donation activities through news on TV, newspapers and other mass media. So in this study, it can be concluded that the lack of blood donor numbers at the RSNGV Blood Bank, is related or connected to a person's knowledge about blood donation activities. A person's knowledge has different intensities and levels, some know, understand, and apply (Notoadmodjo, 2012). This study shows that ignorance or understanding of blood donation activities can affect the desire or intention to donate blood. To increase the number of blood donors, especially for voluntary blood donors, it is necessary to provide sufficient information about blood donation activities, explain the benefits of blood donation, increase charity activities about blood donation, emphasize the importance of regular blood donation, provide counseling to everyone about the intention to donate blood and provide motivation to everyone to donate blood at the blood bank provided at existing health facilities.

**The Relationship Between Management Systems and the Lack of Blood Donor Numbers:** The results of the analysis show that the relationship between the management system and the lack of blood donors statistically shows a significant meaning or has a significant influence ( $p < 0.05$ ) namely 0.044, this means that the management system has an influence on the lack of blood donor numbers, although the level of influence is in a fairly low category ( $r = 0.044$ ). This shows that the management system has a very low influence on the low number of blood donors at the RSNGV Blood Bank. Donating blood does not only depend on the management system applied but also on a person's desire and intention, as well as their knowledge of blood donation activities. Therefore, good management does not necessarily increase the number of blood donors, but with socialization and coordination with various agencies, it can increase the number of blood donors. According to the *National Aids Control Organization of India* (NACO, 2007) explains that there are two categories of blood donors, namely voluntary blood donors and replacement blood donors or other blood donors. In this study, there are many categories of blood donors, namely other donors or family blood donors, because there are family members who need blood. Thus, the coordination between employees and blood donors is quite good, and the quality of the equipment used. Service is an effort made by a person or a group of people or a certain institution to provide



assistance and convenience to the community in order to achieve certain goals from the service provider to the party being served, both those carried out on the basis of the volunteerism of each party to the service provided by the RSNGV Blood Bank. The two main ones are the gap between the supply and demand for safe blood supplies for use by others who need it. If the results of previous research are compared with the current research, it shows that there is a significant relationship between the blood donor service management system and the low number of voluntary blood donors, even though the level of relationship is very low.

The results of this study indicate that 77 respondents' answers stated that the management system was not good, as many as 58.4%, due to lack of coordination with blood donors, lack of information or socialization of information before and after donating blood, lack of supervision from superiors in carrying out blood donation activities and ease of access to blood donor facilities or places. 85.7% stated that the management system was good because there were sufficient and appropriate facilities, while 80.5% of respondents also stated that the service was sufficient and appropriate. So in this study, it can be stated that the management system has an influence or relationship to the lack of blood donor numbers, although the influence or relationship is very low. According to WHO Aide-Memoire recommends that in order to achieve good and safe blood transfusion, the Ministry of Health is responsible for establishing a National blood program with a coordinated blood donor and blood transfusion service system. According to the World Health Organization, the management system to increase the number of blood donors is effective governance to develop a sustainable national blood system, effective program development, coordination of all institutions, the formation of an efficient organizational structure and a mechanism for monitoring the regulation of the blood system.

**Knowledge and Management System for the Lack of Blood Donor Numbers:** According to Mubarak (2007), factors that influence knowledge are education, work, age, interests, experience, environment, and culture. From this study, it shows that the most prominent factors influencing respondents' knowledge are factors of education level, interests, and environment, because of the 77 respondents who participated in this study, around 52% of their education level was still low and 35.1% worked as private sector, so the majority of respondents were from patient families because there were family members and relatives who were sick and needed blood. However, knowledge about donor activities is still very minimal, due to the lack of hearing information about donor activities and being a first-time blood donor because of being forced to have a family member who needs blood. The results of statistical tests show that the level of influence or relationship of knowledge to the lack of donor numbers is in the low category. Thus, efforts are still being made to socialize the community about donor activities to help supply blood for the RSNGV Blood Bank institution, because the blood supply at the RSNGV Blood Bank sometimes runs out of stock.

According to WHO on *Management of National Blood Programs; Proceeding of three WHO Workshop* (2007), explains that every government has a responsibility to ensure the availability, accessibility, adequacy, and safety of blood supply for its people. Therefore, the RSNGV Blood Bank as one of the units that plays an active role in providing blood for patients who need it is always required to provide quality and continuous services. Thus, it is very important to provide good service requirements, namely easy to reach by the community and easy to reach. Due to the location of the Blood Bank which is only in Dili which is the capital city of the country, it is difficult to access by the community as a whole. This study, shows that the management system has an influence or relationship to the lack of blood donors, although the level of relationship is very low, but continues to strive for a good system to increase work productivity, where 83.1% stated that they did not donate blood regularly, 90.9% did not access information about blood donation activities through TV, radio, posters and newspapers), and 81.8% of respondents stated that they did not know and understand the benefits of blood donation can make the body fresher and healthier. Readiness

of facilities, professionalism in serving and coordination with other institutions are the main priorities in order to increase the provision of the required blood stock. Where respondents who donated blood were the majority of blood type O (44.2%), A (36.4%), B (16.9%), AB (2.6%). Thus, the lack of blood donors is caused by various factors, although some of the factors studied are knowledge and the management system implemented, but there are still other factors that have not been studied.

Some factors that trigger the lack of blood donors include:

- Public ignorance about donor activities and the importance of donating blood
- Lack of public awareness to donate blood or no intention to donate blood
- Lack of involvement of other institutions or agencies, especially government agencies, in donating blood.
- Lack of manpower and facilities in carrying out blood donation activities
- Blood donor development and development activities are still centralized at the RSNGV Blood Bank.
- Lack of socialization about the benefits of body donation through the media (TV, radio, posters and newspapers).

From these obstacles, it requires everyone to voluntarily donate blood. Based on the report of the Blood Bank Unit of the Guido Valadares National Hospital in 2019, the total blood collected was 4052 blood bags and distributed blood to those in need, namely 4636 bags, where 95% were in patients treated at the Guido Valadares National Hospital. Thus, to increase the number of blood donors, several activities that must be carried out are as follows:

- Conducting health promotion efforts to the general public about the importance of donating blood.
- Providing socialization and advocacy on community about blood donor program
- Conduct routine coordination with various elements of society, community organizations and government institutions to routinely donate blood 3 times a year.
- Providing facilities and infrastructure that are easily accessible to the public, such as blood donation facilities at available health facilities so that the public or blood donors can easily reach them and donate blood.
- Expanding blood collection areas at existing regional/area hospitals to facilitate the supply and provision of blood.

## CONCLUSION AND SUGGESTIONS

### Conclusion

Based on the research results and analysis of existing data, it can be concluded that:

- There is a relationship between the level of blood donor knowledge and the low number of donors. Where the results of the analysis show that the correlation coefficient value ( $r$ ) is 0.281 and the  $p$ -Value is 0.013 even though the calculated  $r$  value is greater than the  $r$  table value of 0.189, meaning that there is a relationship between blood donor knowledge and the low number of blood donors.
- There is a relationship between the service management system and the lack of blood donors. Where the results of the analysis show that the correlation coefficient value ( $r$ ) is -0.230 and the  $p$ -value is 0.044 even though the calculated  $r$  value is greater than the  $r$  table value of 0.189, meaning that there is a relationship between the donor service management system and the lack of blood donors.
- There were 55.8% of respondents who stated that they did not donate blood of their own free will, 80.5% stated that it was because a family member needed blood, 90.5% stated that

they had never heard information about blood donation activities through the media, 83.1% stated that they had donated blood and 81.3% stated that they did not understand the benefits of blood donation for body health.

- Meanwhile, 85.7% stated that the facilities in the blood donation activities were quite appropriate, 80.5% stated that the service was quite good and 75.3% stated that it was easy to access the blood donation location at the blood bank.

So it can be concluded that a person's knowledge greatly influences someone to be involved in blood donation activities or donate blood regularly at least every 1/3 months and the management system in serving blood donors also has a significant influence where good facilities and services can increase the desire of blood donors to donate blood regularly.

**Suggestion:** Based on the conclusions above, at this stage the researcher would like to provide several suggestions regarding the public's lack of knowledge about blood donation activities as shown below:

- To the leaders at RSNGV, especially the Blood Bank unit, to increase public knowledge through health promotion activities through electronic and print media such as TV, Radio, Newspapers, counseling, seminars in order to increase public participation widely in donating blood to the RSNGV Blood Bank in the future.
- Providing blood donor facilities in all public hospitals at the district level equipped with professional workers and equipment that meets standards.
- Involving all government institutions to mobilize blood donors at various levels throughout the territory of Timor-Leste.
- Developing a recruitment process for voluntary blood donor data collection in all areas integrated with regional referral hospitals.
- Involve government agencies to create mandatory blood donation policies for government agency employees.

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